

We claim:

- Sub B'*
1. A commutator for a motor wherein the commutator comprises at least one magnet.
  2. The commutator of claim 1, wherein the at least one magnet facilitates the collection of information regarding properties of the motor.
  3. The commutator of claim 2, wherein the at least one magnet is integral to the commutator.
- Sub B'*
4. A sensing assembly comprising a commutator having:
    - a. a shell,
    - b. an insulating core positioned adjacent the shell,
    - c. at least one magnet positioned adjacent the core; and
    - d. a sensor.
  5. The sensing assembly of claim 4, wherein the shell comprises copper.
  6. The sensing assembly of claim 4, wherein the commutator is substantially cylindrical and has an outer cylindrical wall and a face.
  7. The sensing assembly of claim 4, wherein the shell is substantially cylindrical and has an inner surface.

8. The sensing assembly of claim 7, wherein the shell comprises at least one anchor extending radially inwardly from the inner surface of the shell.

9. The sensing assembly of claim 4, wherein the core comprises electrically-insulative material.

10. The sensing assembly of claim 4, wherein the magnet comprises electrically non-conductive material.

11. The sensing assembly of claim 4, wherein the magnet comprises a magnetic powder and a resin.

12. The sensing assembly of claim 11, wherein the magnetic powder comprises strontium ferrite.

13. The sensing assembly of claim 11, wherein the magnetic powder comprises barium ferrite.

14. The sensing assembly of claim 6, wherein the magnet is at least partially exposed on the face of commutator.

15. The sensing assembly of claim 6, wherein the magnet is at least partially exposed on the outer cylindrical wall of the commutator.
16. The sensing assembly of claim 4, wherein the commutator further comprises an electrically-conductive material positioned partially within the shell, the electrically-conductive material having an inner face and an outer face adapted to contact an electrical brush in use.
17. The sensing assembly of claim 16, wherein the electrically-conductive material comprises a carboneous material.
18. The sensing assembly of claim 16, wherein the core comprises a material that chemically bonds with at least a portion of the inner face of the electrically-conductive material.
19. The sensing assembly of claim 4, further comprising a magnetic sensor.
20. The sensing assembly of claim 19, wherein the sensor comprises a variable reluctance sensor.
21. The sensing assembly of claim 19, wherein the sensor comprises a Hall-Effect sensor.

Sub B<sup>3</sup> → 22.

A method of manufacturing a commutator comprising:

- a. providing a shell;
- b. providing a magnet;
- b. positioning the magnet at least partially adjacent the shell; and
- c. positioning an electrically-insulative core in contact with the magnet

and the shell.

23. 24. 25. 26. 27.

23. The method of claim 22, wherein positioning the electrically-insulative core comprises molding the core onto a pre-formed magnet.

24. The method of claim 22, wherein providing a magnet comprises mixing a magnet powder and a resin to form a powder mixture and compressing the powder mixture to form the magnet.

25. The method of claim 22, further comprising curing the core and magnet together.

26. The method of claim 22, wherein molding the core onto the magnet further comprises chemically bonding the core and the magnet.

Sub B<sup>4</sup> → 27.

27. The method of claim 22, wherein molding the core onto the magnet further comprises mechanically interlocking the core and the magnet.

28. The method of claim 22, further comprising positioning an electrically-conductive pre-form partially within the shell so that at least a portion of an outer face of the pre-form is exposed.

29. The method of claim 22, wherein positioning the electrically-insulative core comprises molding the core and the magnet together.

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